

Remarks/Arguments

With entry of this Amendment, claims 1, 6, 7, 10, 15-24 and 26-27 are pending in the instant application. Claims 28-89 have been withdrawn as being directed to a non-elected invention. Claims 2-4, 8-9, and 11-14 have been cancelled without prejudice or disclaimer herein. Claims 5 and 25 were previously cancelled in a preceding Amendment without prejudice or disclaimer. Independent claim 1 has been amended to include the limitations of original claim 9, e.g., that the plurality of nanoelements “comprise nanoparticles including a core and an oxidized shell layer that surrounds said core” No new matter is entered. These amendments are made without prejudice to renewal of the claims in their original form and are not to be construed as abandonment or dedication of the previously claimed subject matter or agreement with any objection or rejection of record.

Claim Rejection Under 35 U.S.C. §102(e) and 35 U.S.C. §103(a)

Claim 1 was rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Bawendi (U.S. 20050072989) (“Bawendi”). Claims 1, 2, 6-24, and 26-27 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Flagan (US 2002/0074565) (“Flagan”) in view of Hutchinson (US 2003/0077625) (“Hutchinson”). Claim 20 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Flagan/Hutchinson. Claims 1, 3, 4, 5, and 23 were rejected under 35 U.S.C. §103(a) as allegedly being anticipated by Dai (US 2004/0144972) (“Dai”) in view of Hutchinson.

As noted above, independent claim 1 has been amended herein to include the limitations of dependent claim 9, e.g., to recite that the “nanoelements of the thin film of nanoelements comprise nanoparticles including a core and an oxidized shell layer that surrounds said core.” Independent claim 1 also includes the limitation that the nanoelements are covered with surface functional groups. To the extent that the Examiner’s art rejections are continued to be applied to amended independent claim 1, Applicants respectfully traverse.

In order to anticipate a claimed invention under 35 U.S.C. Section 102(e), the reference must teach each and every element of the claimed invention. Three requirements must be met for a *prima facie* case of obviousness under 35 U.S.C. Section 103. First, again, the prior art reference must teach all of the limitations of the claims (MPEP §2143.03). Second, there must be a motivation to modify the reference or combine the teachings to produce the claimed invention (MPEP §2143.01). Third, a reasonable expectation of success is required (MPEP §2143.02). The teaching or suggestion to combine and the expectation of success must be both found in the prior art and not based on Applicants' disclosure (MPEP §2143). The cited publications, alone or in combination, do not meet these criteria.

As a first point, the cited publications, alone or in combination, do not teach or disclose all of the limitations of the claimed invention of amended claim 1. First of all, neither Dai nor Bawendi teach or disclose a memory device comprising a thin film of nanoelements as claimed in amended claim 1, wherein the thin film of nanoelements comprise nanoparticles including a core and an oxidized shell layer that surrounds said core. Indeed, the Examiner did not reject pending dependent claim 9 from which this limitation was added to claim 1, over either Dai or Bawendi. However, to the extent that the Examiner alleges that the limitations of amended claim 1 are found in the combination of Flagan with Hutchinson, this rejection is respectfully traversed.

There is no teaching or motivation in Flagan that suggests that adding surface functional groups to the nanoparticles in Flagan would improve performance of his memory device. For example, Flagan notes that when his nanoparticles are deposited on a substrate, "a plurality of the discrete nanoparticles, such as exemplary nanoparticles 111 and 113, contact each other. It is an advantage of the present invention that the individual nanoparticles that are each capable of storing an electrical charge, are electrically isolated from each other, even if they contact. This is attributable to the presence of the dielectric coating formed on the particles prior to deposition on the substrate." (See Paragraph [0056] of Flagan, emphasis added; see also paragraph [0057] of Flagan, emphasis added: "As shown in FIG. 8, the plurality of adjacent nanoparticles

contact each other laterally.”). Thus, Flagan discloses that because the use of an oxide shell formed on the nanoparticles helps to isolate the nanoparticles from each other and preclude lateral shorting (e.g., paragraph [0057] of Flagan), it is acceptable if the nanoparticles contact each other, and there is no need (or motivation) for any type of surface functional chemistry on the nanoparticles for nanoparticle-to-nanoparticle spacing.

When a rejection depends on a combination of prior art references, there must be some teaching, suggestion or motivation to combine the references (*In re Geiger*, 815 USPQ2s 1276, 1278 (Fed. Cir. 1987)). The cited references must additionally provide a reasonable expectation of success (*In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991)), and both the motivation to combine and the expectation of success must be found in the prior art (rather than based on Applicants’ disclosure or other hindsight). The Examiner has failed to provide a motivation based upon the cited art to combine the Flagan nanoparticles with the alleged nanostructure spacer group chemistry disclosed in the Hutchinson reference. Indeed, Flagan teaches away from such a combination because Flagan specifically teaches that nanoparticle-to-nanoparticle contact is not an issue in his device and is acceptable.

Accordingly, the Office Action has not established that one of ordinary skill in the art would have any motivation or reason to modify Flagan with the teachings in Hutchinson, since nothing suggests that modifying Flagan in the manner proposed by the Examiner would make Flagan’s device function any better than the device that is actually disclosed.

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In view of the foregoing amendments and remarks, Applicants believe that the present application is in condition for allowance and action toward that end is respectfully requested. If the Examiner believes that a telephone interview would expedite the examination of this application, the Examiner is requested to contact the undersigned at the telephone number below.

Respectfully submitted,

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